IN THE CLAIMS

1. (Currently Amended) A purified or isolated Herpes simplex virus recombinase comprising an alkaline nuclease comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 UL12 alkaline nuclease of SEQ ID NO: 2 and a single stranded DNA binding polypeptide comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 ICP8 single stranded DNA binding polypeptide of SEQ ID NO: 4, and wherein the recombinase has polynucleotide strand exchange activity.

2. (Previously Presented) The purified or isolated Herpes simplex virus recombinase of Claim 1, comprising SEQ ID NO: 2 and SEQ ID NO: 4.

3. (Canceled)

4. (Original) The purified or isolated Herpes simplex virus recombinase of Claim 2, wherein the ratio of the alkaline nuclease to the single stranded DNA binding polypeptide is 1:500 to 1:1.

5. (Previously Presented) The purified or isolated Herpes simplex virus recombinase of Claim 1, wherein the alkaline nuclease, the single stranded DNA binding polypeptide, or both are isolated polypeptides.

6. (Previously Presented) The purified or isolated Herpes simplex virus recombinase of Claim 1, wherein the alkaline nuclease, the single stranded DNA binding polypeptide, or both are expressed in a host cell.

7. (Original) The purified or isolated Herpes simplex virus recombinase of Claim 6, wherein the host cell is an insect cell or a VERO cell.

8 – 10 (Canceled)

11. (Currently Amended) A method of promoting homologous recombination, comprising contacting:

a purified or isolated Herpes simplex virus recombinase, wherein the Herpes simplex virus recombinase comprises an alkaline nuclease comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 UL12 alkaline nuclease of SEQ ID NO: 2 and a single stranded DNA binding polypeptide, comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 ICP8 single stranded DNA binding polypeptide of SEQ ID NO: 4, and wherein the recombinase has polynucleotide strand exchange activity;

a donor polynucleotide comprising a first donor homology region at a first end, a second donor homology region at a second end, and an exogenous sequence therebetween; and

a target polynucleotide comprising a first target homology region at a first end, a second target homology region at a second end, and an endogenous sequence therebetween;

wherein contacting is performed under conditions sufficient to promote homologous recombination.

12. (Original) The method of Claim 11, wherein the first donor homology region and the first target homology region are substantially homologous; and wherein the second donor homology region and the second target homology region are substantially homologous.

13. (Original) The method of Claim 11, wherein contacting is *in vitro*.

14. (Previously Presented) The method of Claim 13, wherein the alkaline nuclease comprises purified Herpes simplex virus-1 UL12 and the single stranded DNA binding polypeptide comprises purified Herpes simplex virus-1 ICP8.

15. (Original) The method of Claim 11, wherein contacting is in a host cell.

16. (Original) The method of Claim 15, wherein the host cell is a mammalian cell.

17. (Original) The method of Claim 15, wherein the host cell comprises a first polynucleotide comprising a Herpes simplex virus-1 UL12 polynucleotide operatively linked to expression control sequences, and a second polynucleotide comprising a Herpes simplex virus-1 ICP8 polynucleotide operatively linked to expression control sequences.

18. (Currently Amended) A cloning kit, comprising:

a Herpes simplex virus recombinase, wherein the Herpes simplex virus recombinase comprises an alkaline nuclease comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 UL12 alkaline nuclease of SEQ ID NO: 2 and a single stranded DNA binding polypeptide, comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 ICP8 single stranded DNA binding polypeptide of SEQ ID NO: 4, and wherein the recombinase has polynucleotide strand exchange activity; and

a target polynucleotide comprising a first target homology region at a first end, a second target homology region at a second end, and an endogenous sequence therebetween.

19. (Original) The cloning kit of Claim 18, wherein the Herpes simplex virus recombinase comprises SEQ ID NO: 2 and SEQ ID NO: 4.

20. (Canceled)

21. (Original) The cloning kit of Claim 18, further comprising a host cell.

22. (Currently Amended) The cloning kit of Claim 21, wherein the host cell comprises a first polynucleotide comprising a nucleotide sequence which is at least ~~90%~~95% homologous to a Herpes simplex virus-1 UL12 polynucleotide of SEQ ID NO: 1, operatively linked to expression control sequences, and a second polynucleotide comprising a nucleotide sequence which is at least ~~90%~~95% homologous to a Herpes simplex virus-1 ICP8 polynucleotide of SEQ ID NO: 3, operatively linked to expression control sequences.

23. (Original) The cloning kit of Claim 18, wherein the endogenous sequence comprises a polylinker.

24. (Original) The cloning kit of Claim 18 wherein the endogenous sequence comprises at least one regulatory sequence for protein expression.

25. (Currently Amended) A method of treating a eukaryotic host cell, comprising delivering to the eukaryotic host cell:

a Herpes simplex virus recombinase, wherein the Herpes simplex virus recombinase comprises an alkaline nuclease comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 UL12 alkaline nuclease of SEQ ID NO: 2 and a single stranded DNA binding polypeptide comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 ICP8 single stranded DNA binding polypeptide of SEQ ID NO: 4, and wherein the recombinase has polynucleotide strand exchange activity; and

a donor polynucleotide comprising a first donor homology region at a first end, a second donor homology region at a second end, and an exogenous sequence therebetween.

26. (Previously Presented) The method of Claim 25, wherein the Herpes simplex virus recombinase comprises SEQ ID NO: 2 and SEQ ID NO: 4.

27 – 31 (Canceled)

32. (Currently Amended) A method of treating an organism comprising:

delivering to the organism a composition comprising a Herpes simplex virus recombinase; and a donor polynucleotide comprising a first donor homology region at a first end, a second donor homology region at a second end, and an exogenous sequence therebetween; wherein the Herpes simplex virus recombinase comprises an alkaline nuclease comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 UL12 alkaline nuclease of SEQ ID NO: 2 and a single stranded DNA binding polypeptide comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 ICP8 single stranded DNA binding polypeptide of SEQ ID NO: 4, and wherein the recombinase has polynucleotide strand exchange activity.

33. (Previously Presented) The gene therapy method of Claim 32, wherein the Herpes simplex virus recombinase comprises SEQ ID NO: 2 and SEQ ID NO: 4.

34. (Original) The method of Claim 32, wherein the Herpes simplex virus recombinase is expressed in an infectious vector.

35. (Currently Amended) A method of making a modified host cell comprising:

delivering to the host cell a composition comprising a Herpes simplex virus recombinase; and a donor polynucleotide comprising a first donor homology region at a first end, a second donor homology region at a second end, and an exogenous sequence therebetween; wherein the Herpes simplex virus recombinase comprises an alkaline nuclease comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 UL12 alkaline nuclease of SEQ ID NO: 2 and a single stranded DNA binding polypeptide comprising an amino acid sequence which is at least ~~90%~~95% identical to a Herpes simplex virus-1 ICP8 single stranded DNA binding polypeptide of SEQ ID NO: 4, and wherein the recombinase has polynucleotide strand exchange activity.

36. (Previously Presented) The method of Claim 35, wherein the Herpes simplex virus recombinase comprises SEQ ID NO: 2 and SEQ ID NO: 4.

37. (Previously Presented) The purified or isolated Herpes simplex virus recombinase of Claim 1, wherein the alkaline nuclease, the single stranded DNA binding polypeptide, or both are purified polypeptides.